

WHAT IS CLAIMED IS:

- 1 1. A method, comprising:
2 managing transmission of data through a plurality of adaptors connected to
3 switches;
4 sending through the adaptors at least one query to the switches connected to the
5 adaptor to determine a status of external ports in each queried switch communicating
6 with a network; and
7 in response to determining from the at least one query that no external ports are
8 operational in one non-operational switch, indicating not to transmit data to the adaptor
9 connected to the non-operational switch.

- 1 2. The method of claim 1, further comprising:
2 maintaining a switch map including information associating the adaptors with the
3 switch to which the adaptors connect and a status of the external ports on the switches;
4 and
5 updating the status of the external ports to the status determined from the at least
6 one query.

- 1 3. The method of claim 1, further comprising:
2 indicating to transmit data to one adaptor connected to one switch having at least
3 one operational external port in response to determining from the at least one query that
4 at least one external port in the switch is operational when the switch was previously
5 indicated as non-operational.

- 1 4. The method of claim 3, further comprising:
2 performing a failover to the switch that is operational from the switch that is non-
3 operational in response to determining from the at least one query that one switch is non-
4 operational; and
5 performing a failback to the switch that is determined to have at least one
6 operational external port when the switch was previously indicated as non-operational.

1 5. The method of claim 1, wherein the adaptors are managed as a team and
2 wherein load balancing operations are performed when transmitting data through the
3 adaptors.

1 6. The method of claim 1, wherein each adaptor is connected to a different
2 switch to provide redundant paths to the network.

1 7. The method of claim 1, wherein the operations of managing the
2 transmissions of data, sending the at least one query and indicating not to transmit data to
3 one adaptor is performed by an intermediate device driver executing in a server in
4 communication with adaptor device drivers, wherein each switch and the server are
5 implemented on different printed circuit boards, and wherein the server and switch
6 printed circuit board are in a chassis.

1 8. The method of claim 1, wherein the at least one query comprises an
2 SNMP query of the external port link status.

1 9. A system in communication with at least one switch, wherein the switch
2 communicates with a network, comprising:
3 a plurality of adaptors connected to the at least one switch;
4 circuitry capable of causing operations, the operations comprising:
5 (i) managing transmission of data through the adaptors;
6 (ii) sending through the adaptors at least one query to the switches
7 connected to the adaptor to determine a status of external ports in each queried
8 switch communicating with the network; and
9 (iii) in response to determining from the at least one query that no external
10 ports are operational in one non-operational switch, then indicating not to transmit
11 data to the adaptor connected to the non-operational switch.

1 10. The system of claim 9, further comprising:
2 a switch map including information associating the adaptors with the switch to
3 which the adaptors connect and a status of the external ports on the switches, wherein the
4 operations performed by the circuitry are further capable of updating the status of the
5 external ports to the status determined from the at least one query.

1 11. The system of claim 9, wherein the operations performed by the circuitry
2 are further capable of:
3 indicating to transmit data to one adaptor connected to one switch having at least
4 one operational external port in response to determining from the at least one query that
5 at least one external port in the switch is operational when the switch was previously
6 indicated as non-operational.

1 12. The system of claim 9, wherein the operations performed by the circuitry
2 are further capable of:
3 performing a failover to the switch that is operational from the switch that is non-
4 operational in response to determining from the at least one query that one switch is non-
5 operational; and
6 performing a failback to the switch that is determined to have at least one
7 operational external port when the switch was previously indicated as non-operational.

1 13. The system of claim 9, wherein the adaptors are managed as a team and
2 wherein load balancing operations are performed when transmitting data through the
3 adaptors.

1 14. The system of claim 9, wherein each adaptor is connected to a different
2 switch to provide redundant paths to the network.

1 15. The system of claim 9, wherein the circuitry for performing the operations
2 of managing the transmissions of data, sending the at least one query and indicating not

3 to transmit data to one adaptor is implemented as an intermediate device driver, further
4 comprising:
5 at least one adaptor device driver in communication with the intermediate device
6 driver managing communications to at least one adaptor.

1 16. The system of claim 9, further comprising:
2 a chassis, wherein the switches are implemented on printed circuit boards in the
3 chassis; and
4 a printed circuit board in the chassis on which the circuitry and adaptors are
5 implemented.

1 17. The system of claim 9, wherein the at least one query comprises an SNMP
2 query of the external port link status.

1 18. A system in communication with a network, comprising:
2 (a) a chassis;
3 (b) a plurality of switch printed circuit boards capable of being inserted in the
4 chassis;
5 (c) a server printed circuit board capable of being inserted in the chassis, and
6 including:
7 (i) a plurality of adaptors connected to the switch printed circuit boards;
8 (ii) circuitry capable of causing operations, the operations comprising:
9 (A) managing transmission of data through the adaptors;
10 (B) sending through the adaptors at least one query to the switch
11 printed circuit boards connected to the adaptor to determine a status of
12 external ports in each queried switch communicating with the network;
13 and
14 (C) in response to determining from the at least one query that no
15 external ports are operational in one non-operational switch printed circuit
16 board, then indicating not to transmit data to the adaptor connected to the
17 non-operational switch printed circuit board.

1 19. The system of claim 18, wherein the server printed circuit board further
2 includes:

3 a switch map including information associating the adaptors with the switch to
4 which the adaptors connect and a status of the external ports on the switches, wherein the
5 operations performed by the circuitry are further capable of updating the status of the
6 external ports to the status determined from the at least one query.

1 20. An article of manufacture in communication with adaptors connected to
2 switches, wherein the switches provide communication with a network, and wherein the
3 article of manufacture is capable of causing operations to be performed, the operations,
4 comprising:

5 managing transmission of data through the adaptors connected to the switches;
6 sending through the adaptors at least one query to the switches connected to the
7 adaptor to determine a status of external ports in each queried switch communicating
8 with the network; and

9 in response to determining from the at least one query that no external ports are
10 operational in one non-operational switch, then indicating not to transmit data to the
11 adaptor connected to the non-operational switch.

1 21. The article of manufacture of claim 20, wherein the operations further
2 comprise:

3 maintaining a switch map including information associating the adaptors with the
4 switch to which the adaptors connect and a status of the external ports on the switches;
5 and

6 updating the status of the external ports to the status determined from the at least
7 one query.

1 22. The article of manufacture of claim 20, wherein the operations further
2 comprise:

3 indicating to transmit data to one adaptor connected to one switch having at least
4 one operational external port in response to determining from the at least one query that

5 at least one external port in the switch is operational when the switch was previously
6 indicated as non-operational.

1 23. The article of manufacture of claim 22, wherein the operations further
2 comprise:
3 performing a failover to the switch that is operational from the switch that is non-
4 operational in response to determining from the at least one query that one switch is non-
5 operational; and
6 performing a failback to the switch that is determined to have at least one
7 operational external port when the switch was previously indicated as non-operational.

1 24. The article of manufacture of claim 20, wherein the adaptors are managed
2 as a team and wherein load balancing operations are performed when transmitting data
3 through the adaptors.

1 25. The article of manufacture of claim 20, wherein each adaptor is connected
2 to a different switch to provide redundant paths to the network.

1 26. The article of manufacture of claim 20, wherein the operations are
2 performed by an intermediate device driver in communication with adaptor device
3 drivers.

1 27. The article of manufacture of claim 20, wherein the at least one query
2 comprises an SNMP query of the external port link status.